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Workshop 7

Outreach and Public Service

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## Outreach and Public Service

### Abstract

The Alabama Space Grant Consortium plan for outreach and public service is presented as a model for study and discussion. It is consistent with the objectives of the Space Grant Program and expresses a strong commitment to cooperation between academia, industry, and government.

### Introduction

In carrying out the objectives of the NASA sponsored National Space Grant College and Fellowship Program, the Alabama Space Grant Consortium (ASGC) is presently involved in substantial outreach (public service) activities. Additionally, a number of new outreach efforts as well as extension of present efforts are proposed.

The Alabama Space Grant Consortium (ASGC) defines outreach/public service as any effort designed to increase the level of knowledge and awareness of NASA type activities in and among the various sectors of the non-NASA community and to encourage present and future generations to pursue NASA oriented careers.

The members of the Alabama Space Grant Consortium are:

- The University of Alabama in Huntsville - (UAH)
- Alabama A & M University - (A&MU)
- The University of Alabama - (UA)
- The University of Alabama at Birmingham - (UAB)
- Auburn University - (AU)

### Outreach/Public Service Activities

**Alabama Space and Rocket Center:** The Alabama Space and Rocket Center (ASRC), an agency of the State of Alabama located in Huntsville adjacent to the Marshall Space Flight Center (MSFC), will be an affiliate of the Consortium. The ASRC, home of Space Camp and Space Academy, is a showcase of America's space technology and is widely known for its "learn by doing" exhibits related to astronaut training and rocket technology. It also serves as the Visitor Information Center for MSFC. As an affiliate of the Consortium, ASRC will provide a valuable interface with the public and will expand its current collaboration with the universities in special teacher training programs and motivation of youth toward studies in mathematics, science, and other aerospace-related fields. Additionally, ASRC will host several major consortium activities.

**Current Public Service Activities:** The consortium members have extensive aerospace public services that involve many academic departments and specialize research centers. These services demonstrate not only the universities' commitments to disseminate their expertise to the public sector, but also the maturity of programs of aerospace research and instruction within the universities. Current programs assist NASA and aerospace industries in maintaining well-qualified work forces, disseminating aerospace information, encouraging minority participation in the nation's space program, and assisting the development of aerospace industries. A sampling of public service activities follows.

**Summer Faculty Fellowship Program:** UA and UAH jointly administer the NASA/ASEE Summer Faculty Fellowship Program for the Marshall Space Flight Center. Participants spend 10 weeks at MSFC doing research with a NASA colleague. Since December 1988, UA has administered a Research Continuation Program for faculty members who have completed the fellowship program. These programs broaden the base of university support for NASA and, in some cases, introduce faculty to new opportunities for participation.

**Nursing in Space:** In April 1988, UAH and its College of Nursing sponsored the first National Conference on Nursing in Space. This conference introduced new research and service opportunities for the participants and demonstrated the strong interest of the nursing discipline in becoming more involved in space activities. A second conference is scheduled for the spring of 1990.

**Space Orientation for Professional Educators:** UAH has developed a model in-service program called "Space Orientation for Professional Educators (SOPE)." This program, began in the summer 1987, provides concentrated instruction to prepare teachers to broaden and enrich their own teaching of science and technology. Teachers from elementary and secondary schools and junior colleges from across the nation learn about space during a credit-earning graduate course of one week that uses the facilities and personnel of UAH, ASRC, and MSFC. Teachers take back to their schools ideas for class presentations and simulation activities, sets of easily-reproduced experiments, and an enthusiasm for space that should spread to their students and encourage them to study mathematics, science, and other disciplines critical to this nation's future in space exploration and development. More than 900 teachers participated in this program in its first year two years and approximately 700 are enrolled for the current year. In 1987, the SOPE Program was recognized as an exemplary demonstration project by the United States Department of Education.

Space Academy II: The UAH College of Science collaborates with ASRC in a program called Space Academy II where advanced high school students spend a concentrated two-week period being trained in simulators and in demonstrations at ASRC and in lectures by UAH faculty. More than 1500 students have taken this course called "Introduction to Space Science".

Teaching Physics in Public Schools: Over the past four years through an informal arrangement between the College of Science and the Huntsville City Schools, UAH graduate teaching assistants have taught physics classes in selected city high schools with large minority enrollments. This has stimulated a 300 percent increase in physics enrollments at these schools and increased interest in mathematics.

Public Services to Promote Minority Participation in Space-Related Activities: The Consortium members recognize the rich resources to be afforded by this nation by enhancing participation of women and minorities in science and technology and, as a consequence, have developed programs and strategies to enlarge the number of minorities, female faculty and students.

Alabama A & M University hosted, in January 1989, a forum to facilitate discussion between NASA and historically black colleges and universities (HBCU) with interests and capabilities in space-related research. A similar conference was held with the Department of Defense and focused on research at the HBCUs in optics and materials, remote sensing, artificial intelligence, intelligent systems, computational fluid dynamics, and biological systems.

Kiddie College: Other activities include a Kiddie College to encourage the study of science, and mathematics at the elementary level; assistance to the two local magnet programs (space science and international studies in the city's secondary school with the largest minority/black enrollment; and development of computer-based instructional techniques.

Space Education in High Schools: UA has been actively involved in promoting science and engineering in Tuscaloosa high schools. The Aerospace Engineering Department helped students in an area high school build a low-speed wind tunnel that is used in classes to demonstrate various aerodynamic principles. The Department of Physics and Astronomy assists public schools and serves as a community resource for astronomical events. The UA College of Education conducts summer programs in aerospace education for elementary students. Also, in conjunction with Livingston University, UA has a state-funded Teacher In-Service Center providing programs for teachers in twelve west Alabama counties. Some of the most popular programs offered by the In-Service Center are in aerospace education.

**Public Services to Assist Aerospace Industries:** The most significant public service of the Consortium members has been the development of graduates to staff government and industry, and this will continue as a primary function. In addition, the universities encourage their faculty to assist industry and government, especially in the development of new enterprises. For example, at UAB the Office for the Advancement of Developing Industries (OADI), a partnership of university, government, and private resources, fosters the growth of advanced technology start-up companies located in Alabama. The OADI offers a variety of clerical, professional, and management services to entrepreneurs and manages the Center for the Advancement of Developing Industries (CADI), Alabama's high-technology incubator facility. This new 36,000 square foot facility became operational in October 1986, and contains lease space for 10 wet laboratories and approximately 25 office suites. One of the tenants of this facility, BioCryst, was a direct outgrowth of the Center for Macromolecular Crystallography.

**Engineer Day Activities:** The engineering colleges of the Consortium universities conduct annual Engineer Day activities and include special emphasis on space-related activity. This feature always attracts large numbers of prospective students. Recently, AU sponsored a one-day public symposium entitled; "The University Role in Space Research, Development, and Missions" that attracted national officials and astronauts as well as current and prospective students. Such events add to the continuing interest of students in space-related careers. In addition, the engineering Extension service of AU conducts about 150 programs yearly to a broad cross section of its engineering constituency. Discussions of aerospace-related opportunities and responsibilities are prominent in these programs.

#### Proposed Outreach/Public Service Activities

**Information Network:** The Consortium will implement a comprehensive aerospace information network to enhance state and regional understanding of space resources and the nation's goals and objectives in space. The Alabama Consortium is fortunate to have at its disposal the full information-distribution systems of two major land grant universities (AAMU and AU). These systems will be used to support consortium activities to create broad-based public knowledge of space exploration and development. By September 1989, the new state-of-the-art satellite uplink facility (K-band and C-band transmitters) at AU will be completed and will be used in the Consortium's programs of education and information dissemination. Through these and other mechanisms, the consortium will make available vital space-related information to individuals, elementary and secondary schools, junior and senior colleges, industries, and government organizations.

The Consortium also will use the TI-IN United Star Network to enhance and enrich science and mathematics education in state and regional high schools that otherwise would be unable to provide such instruction.

The Consortium will maintain a library of the academic, research and service activities in progress in the member universities that may be of common interest to the members, NASA, and others. This library will include all relevant technical publications, curriculum development activities, outreach activities, research updates, and announcements of colloquia and seminars. The Consortium also will maintain a composite directory of faculty and staff members, including their aerospace research interests, at the member institutions.

**Summer Faculty Program:** The Consortium will plan a summer visiting-faculty research fellowship program for implementation on a small scale during summer, 1990. This program will assist faculty in non-research oriented colleges and universities to do space-related research. These fellowships will bring such faculty to the campuses of Consortium member universities to participate in research on issues of importance to NASA and for other professional activities designed to enrich the instruction provided in non-research colleges and universities.

**Personnel Exchange with Marshall Space Flight Center:** The Consortium also proposes to implement in 1990 a pilot program with NASA through which the Consortium and NASA exchange personnel agreed upon periods of time. This exchange will encourage communication between universities and the space agency based upon improved understanding of the activities and capabilities of each institution. Research and teaching will benefit from the exchange. The pilot will involve initially the Alabama Consortium, UAH and AAMU because of their proximity to MSFC. The program will operate at no additional costs to the universities or to NASA. As funds became available, this program will be expanded to include participation of faculty at universities outside Huntsville.

**Space Science and Engineering Center:** Auburn University plans to inaugurate in the fall 1989, a Space Science and Engineering Center as an umbrella organization to initiate, advocate, and foster campus-wide programs of instruction, research, and extension focused on aerospace. The proposed Center will draw together the wide variety of current and planned projects and coordinate the rapid growth in space-related activities anticipated for the 1990s.

## Summary

In summary, the Alabama Space Grant Consortium's program plan is consistent with NASA's objectives for the Space Grant College and Fellowship Program. The new and enhanced activities of the Consortium, which are outlined above, express a strong commitment to cooperation with government, industries, and educational institutions. Some initiatives will be identified closely with one Consortium member and some will be joint efforts involving several of the members. Flexibility to accommodate new ideas and new projects will be maintained at all times. In all its activities, the Consortium will share information, make use of the substantial talents of individuals at all the universities, and will be responsible to NASA's needs.